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WATERFOWL HARVEST IN THE UNITED STATES 1959-60 HUNTING SEASON

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**UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
SPECIAL SCIENTIFIC REPORT—WILDLIFE No. 52**

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United States Department of the Interior, Fred A. Seaton, Secretary
Fish and Wildlife Service, Arnie J. Suonela, Commissioner
Bureau of Sport Fisheries and Wildlife, Daniel H. Janzen, Director

WATERFOWL HARVEST IN THE UNITED STATES
DURING THE 1959-60 HUNTING SEASON

by

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INTRODUCTION

During the waterfowl-hunting season of 1952-53, the Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service, inaugurated a mail-survey system for obtaining information from hunters about the amount of hunting they did, the number of ducks they shot, and other information of interest. The survey has been repeated each year since that time. Results have been included in the annual status reports of waterfowl.¹ Beginning with the present, however, this report will be issued separately. The survey is made each year immediately following the shooting season. The system is to select at random a series of sales outlets at Post Offices where Migratory Bird Hunting Stamps are sold, and ask these Post Offices to give an address card to each person who buys a stamp. The card requests the hunter to send his name and address to the Bureau. The hunters who do this are then sent the questionnaire. A large sample is selected from each flyway.

Data from the survey are used to estimate the harvest and the amount of hunting and to furnish information on the relationships between hunting regulations, hunter activity, and harvest, under changing conditions.

The objectives of the 1959-60 survey were to estimate for each Flyway:

- (1) The total number of ducks, geese, and coots shot, including those that were lost as well as those that were retrieved.
- (2) The number of people who planned to hunt (potential hunters).
- (3) The number of people who did hunt (active hunters).
- (4) The average number of times active waterfowl hunters were in the field hunting during the season.
- (5) The proportion of the total duck bag and proportion of total hunting activity in each of six different parts of the season.

¹Special Scientific Report: Wildlife; numbers 22, 26, 29, 33, 37, 40, 45, and supplement to 45.

The number of questionnaires mailed and the number returned are shown in the following table:

Flyway	No. of Hunters Receiving Questionnaires		No. of Hunters Responding		Per Cent Responding	
	1959-60	1958-59	1959-60	1958-59	1959-60	1958-59
Atlantic*	13,626	13,093	9,256	9,306	67.9	71.1
Mississippi*	26,857	17,097	18,594	11,902	69.2	69.6
Central	5,610	6,598	3,647	4,550	65.0	69.0
Pacific	9,398	11,756	6,881	8,396	73.2	71.4
Total	55,493	48,544	38,378	34,154	69.2	70.4

*Beginning with the 1957-58 season, the sample size was increased for certain States, who then carried part of the expense by cost contracts. Contracts for this additional sampling were in effect with 16 States in the Atlantic and Mississippi Flyways during the 1959-60 season.

Data in the tables of this report have been adjusted to allow for biases that tended to exaggerate the estimates of hunting activity and kill.¹ Species composition of the kill is accepted as reported.

Hunters recorded their hunting trips and bag of ducks on a calendar on the questionnaire. For each Flyway, the hunting and kill data were grouped in six successive periods. These periods varied in length, as shown in column 2 of Tables 6, 9, 12 and 15, because season length varied among groups of States. Hunting activity in these tables was derived as follows: the number of hunters who reported one or more trips in a given period was divided by the sum of these numbers for the six periods. This gave the percentage of the total season's activity that took place in each period. This percentage then was divided by the number of days in the period to give the daily rates shown.

¹These errors and methods for making the corrections are partially described in the publications listed below. A mimeographed description of methods is available on request.

Atwood, E. L. Validity of Mail Survey Data on Bagged Waterfowl. Journal of Wildlife Management, 20 (1): 1-16. January 1956.

Atwood, E. L. A Procedure for Removing the Effect of Response Bias Errors from Waterfowl Questionnaire Responses. Biometrics, 14 (1): 132 March 1958.

To obtain the fraction of hunters who were active during any one period: multiply this average daily percentage of activity (column 4) by the number of days in the period (column 2), then by the average number of periods reported per hunter. For example, 35% hunted during period 4 in the Pacific Flyway States.

The daily average number of ducks bagged (column 6) is derived as follows: the daily percentage of ducks bagged (column 5) is divided by the daily percentage of hunting activity (column 4). This quotient then is multiplied by the average daily bag for the season.

RESULTS

It was estimated that 7,051,140 ducks were retrieved during the 1959-60 waterfowl season in the United States (except Alaska and Hawaii), as shown in Table 1. This was the smallest bag since the new sampling system was inaugurated during the 1952-53 season. The estimated decline from 1958-59 was nearly 42 per cent and the estimated decline from the seven year average (1952-58) was almost 41 per cent. It was estimated that 1,377,720 ducks were killed but not retrieved. This also was the smallest estimate since 1952. It was about 45 per cent lower than the estimate for 1958-59 (Table 1). There were decreases from 1958-59 among all species of ducks retrieved except the scaup and scoter; the greatest relative decreases were among canvasbacks (61%), redheads (58%), and ring-necked ducks (59%). Canvasbacks decreased 71 per cent from the average for 1952-58 and redheads and ring-necks decreased about the same amount. In general, the decrease in the bag of species whose principal nesting area is in the prairie provinces was proportionally greater than the decrease in number of hunters (26%). The bag of species whose principal nesting area is elsewhere did not follow so uniform a rule.

It was estimated that 734,323 geese were bagged, a decrease of about 15 per cent from 1958-59 (Table 1). Estimates of the bag of blue geese and brant increased. The increase in brant was in the Atlantic Flyway, and was great enough to offset a substantial decrease in the bag in the Pacific Flyway. It was estimated that 142,475 geese were killed but not retrieved, a decrease of about 16 per cent from 1958-59.

The bag of coots was estimated at only 167,080, a decrease of almost 72 per cent from 1958-59. Coots that were killed but not retrieved were estimated at 95,585, down 45 per cent from 1958-59 (Table 1). Both of these estimates were the smallest since 1952.

In the four flyways, changes in the estimated duck bag generally conformed closely to the national pattern. The drop was 38% in the Pacific Flyway and either 42% or 43% in each of the other three flyways. In each flyway the decrease in the goose bag was proportionally less than the decrease in hunters and the decrease in the coot bag was proportionally much greater than the decrease in hunters.

Table 1.

UNITED STATES TOTAL DUCK HARVEST

Species	1959-60	1958-59	Percent Change
			1958-59 to 1959-60
Mallard	2,856,030	5,671,484	-49.64
G-W Teal	727,688	1,176,752	-38.16
Pintail	667,435	1,380,515	-51.65
Scaup	532,471	396,754	+34.21
B-W Teal	459,393	528,654	-13.10
American Wigeon	387,734	597,299	-35.09
Black Duck	303,949	486,354	-37.50
Wood Duck	244,586	290,219	-15.72
Shoveler	156,041	269,657	-42.13
Canvasback	114,609	296,031	-61.29
Ring-necked	86,751	211,091	-58.90
Gadwall	83,334	123,928	-32.76
Redhead	77,004	183,485	-58.03
Bufflehead	71,777	82,710	-13.22
Merganser	70,129	80,187	-12.54
Goldeneye	67,952	95,543	-28.88
Cinnamon Teal	51,113	63,220	-19.15
Ruddy	44,521	79,137	-43.74
Scoter	44,264	43,916	+ .79
Others*	4,363	5,658	-22.89
Total Retrieved	7,051,144	12,062,594	-41.55
Total Not Retrieved	1,377,718	2,467,347	-44.16
Total Kill	8,428,862	14,529,941	-41.99

*Largely Old Squaw and Eiders.

Table 2. UNITED STATES TOTAL GOOSE AND COOT HARVEST

Species	1959-60	1958-59	Percent Change 1958-59 to 1959-60
Canada Goose	378,803	479,526	-21.00
Snow Goose	133,412	153,505	-13.09
Blue Goose	79,152	64,825	+22.10
White-fronted Goose	61,824	83,177	-25.67
Cackling Goose	52,465	59,034	-11.13
Brant	26,827	21,872	+22.65
Others	1,840	662	- -
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Total Geese Retrieved	734,323	863,141	-14.93
Total Geese Not Retrieved	142,477	169,834	-16.11
Total Goose Kill	876,800	1,032,975	-15.12
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Total Coots Retrieved	167,079	587,174	-71.55
Total Coots Not Retrieved	95,585	172,249	-44.51
Total Coot Kill	262,664	759,423	-65.41

Table 3. NUMBER OF POTENTIAL AND ACTIVE WATERFOWL
HUNTERS IN THE UNITED STATES

Number of Potential Hunters	1959-60	1958-59	Percent Change 1958-59 to 1959-60
Over 15*	1,571,622	2,130,997	-26.25
Under 16	136,707	182,329	-25.02
Total	1,708,329	2,313,326	-26.15
NUMBER OF ACTIVE HUNTERS**			
Over 15	1,321,949	1,837,702	-28.07
Under 16	102,079	141,564	-27.89
Total	1,424,028	1,979,266	-28.05

*Individuals who purchased a Duck Stamp with intent to hunt.

**Individuals who hunted at least once.

Table 4

Atlantic Flyway Data

Waterfowl Kill Information

The following table presents the estimated number of waterfowl bagged and waterfowl knocked down but not retrieved during the 1958-59 and 1959-60 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Species	1959-1960	1958-1959	Percent Change
			1958-59 to 1959-60
Black	177,488	268,081	-33.79
Mallard	120,734	247,463	-51.21
Canvasback	15,237	64,811	-76.49
Wood Duck	73,511	110,471	-33.46
Scaup	55,609	108,289	-48.65
G-W Teal	35,457	42,703	-16.97
B-W Teal	22,824	32,734	-30.28
American Wigeon	22,633	42,643	-46.93
Pintail	22,729	80,862	-71.89
Goldeneye	19,579	22,836	-14.26
Redhead	7,008	16,516	-57.57
Merganser	24,944	28,727	-13.17
Ring-necked	16,436	35,702	-53.96
Scoter	32,396	31,565	+ 2.63
Ruddy	5,440	10,005	-45.63
Bufflehead	21,031	36,311	-42.08
Shoveler	2,325	6,105	-61.92
Gadwall	4,008	3,577	+12.05
Others*	2,339	3,077	-23.99
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Total Ducks Retrieved	681,729	1,192,478	-42.83
Total Ducks not Retrieved	160,147	294,948	-45.70
Total Duck Kill	841,876	1,487,426	-43.40
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Canada Goose	38,996	59,875	-34.87
Brant	20,409	12,963	+15.74
Other Geese**	397	662	-40.03
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Total Geese Retrieved	59,802	73,500	-18.64
Total Geese not Retrieved	12,574	10,330	+21.72
Total Goose Kill	72,376	83,830	-13.66
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Total Coots Retrieved	10,525	61,545	-82.90
Total Coots not Retrieved	5,608	23,800	-76.44
Total Coot Kill	16,133	85,345	-81.10

*Mostly Old Squaw and Eider Ducks

**Mostly Blue Geese

Table 5

Atlantic Flyway Data

Number of Hunters, Average Times Hunted, Seasonal Bag, Seasonal Unretrieved Kill and Daily Bag as Determined by the Waterfowl Hunter Mail Survey.

		1959-1960	1958-1959	Percent Change 1958-59 to 1959-60
Number of Potential Hunters				
Over 15*		229,158	316,664	-27.63
Under 16		15,015	20,288	
Total		244,173	336,952	-27.54
Number of Active Hunters**				
Over 15		190,561	270,676	-29.60
Under 16		10,408	15,267	-31.83
Total		200,969	285,943	-29.72
Average Times Hunted**		3,442	3,523	- 2.30
Average Seasonal Bag**				
Over 15	Ducks	3,506	4,306	-18.58
	Geese	.304	.262	+16.03
	Coots	.050	.211	-76.30
Under 16	Ducks	1.300	1.762	-26.22
	Geese	.173	.164	+ 5.49
	Coots	.092	.293	-68.60
Average Seasonal No. not Retrieved**				
Over 15	Ducks	.818	1.057	-22.61
	Geese	.064	.037	+72.97
	Coots	.028	.081	-65.43
Under 16	Ducks	.406	.576	-29.51
	Geese	.042	.022	+90.91
	Coots	.020	.128	-84.37
Average Daily Bag**				
Over 15	Ducks	1.019	1.222	-16.61
	Geese	.088	.074	+18.92
	Coots	.015	.060	-75.00
Under 16	Ducks	.378	.500	-24.40
	Geese	.050	.046	+ 8.70
	Coots	.027	.083	-67.47

*Individuals who purchased a Duck Stamp with intent to hunt.

** Individuals who hunted at least once.

Table 6. Duck Kill and Hunter Activity in the Atlantic Flyway

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ¹	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-7	2.22	3.17	3.79	1.18
2	8-14	2.22	2.69	2.50	.92
3	15-21	2.22	2.21	1.86	.83
4	22-28	2.22	2.14	1.87	.86
5	29-35	2.22	2.03	1.89	.92
6	36-45	2.22	1.43	1.67	1.15

¹The average number of periods per hunter was 1.44

Explanatory Comments for Table 6

The hunting season was 40 days long in some States of the Atlantic Flyway and 50 days long in other States. Data for the two lengths of season are given separately in Tables 6A and 6B. Data are combined in Table 6.

For the Flyway as a whole, each day is 2.22% of the total (Table 6, Column 3). Therefore, any daily percentage (in Columns 4 or 5) that differs from 2.22 is correspondingly greater or lesser than the average for that characteristic. The average rates for the States with 40 or 50-day seasons are shown in Column 3 of Tables 6A and 6B.

Daily hunting activity (Table 6, Column 4) decreased during the season. Half of the hunting in the Atlantic Flyway (combined data) was done by the time 40 per cent of the season was over, and 60 per cent was done by the time the season was half over. This was similar to the pattern of hunting activity in the Mississippi Flyway (40 and 50 days) and the Central Flyway (50 and 60 days) but in contrast to the Pacific Flyway (94 days), where half of the season was over before half the hunting was done.

Daily percentages of the total duck bag also declined during the season.

Hunters bagged ducks through the season, but hunting activity was not well coordinated with the daily average bag, as can be seen by comparing Column 4 with Column 6. The highest rate of hunting activity occurred when the daily average bag was greatest

(first period), but the lowest rate of hunting activity occurred when the daily average bag was next to greatest (last period). Hunting activity was not precisely coordinated with duck kill in any of the Flyways.

Table 6A. Duck Kill and Hunter Activity in the Atlantic Flyway:
40 Day Season.¹

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ²	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-7	2.50	3.19	3.92	1.34
2	8-14	2.50	2.79	2.39	.94
3	15-21	2.50	2.42	2.07	.94
4	22-28	2.50	2.30	2.23	1.06
5	29-35	2.50	1.99	2.01	1.10
6	36-40	2.50	2.24	2.35	1.14

¹Delaware, Florida, Georgia, New Jersey, South Carolina.

²The average number of periods per hunter was 1.52.

Table 6B. Duck Kill and Hunter Activity in the Atlantic Flyway:
50 Day Season.¹

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ²	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-7	2.00	3.16	3.73	1.12
2	8-14	2.00	2.65	2.54	.91
3	15-21	2.00	2.13	1.77	.79
4	22-28	2.00	2.07	1.72	.79
5	29-35	2.00	2.05	1.84	.85
6	36-50	2.00	1.04	1.25	1.14

¹Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New York, North Carolina, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia.

²The average number of periods per hunter was 1.41.

Table 7

Mississippi Flyway Data

Waterfowl Kill Information

The following table presents the estimated number of waterfowl bagged and waterfowl knocked down but not retrieved during the 1958-59 and 1959-60 shooting seasons as determined by the Waterfowl Hunter Mail Survey.

Species	1959-1960	1958-1959	Percent Change
			1958-59 to 1959-60
Mallard	1,279,578	3,043,796	-57.96
G-W Teal	240,228	356,648	-32.64
B-W Teal	243,284	240,020	+ 1.36
Pintail	120,455	180,507	-33.26
Black Duck	125,141	217,372	-42.43
Scaup	322,896	213,270	+51.40
Canvasback	37,624	84,498	-55.47
Redhead	29,805	54,464	-45.28
Ring-necked	51,515	125,708	-59.02
Gadwall	21,100	44,831	-52.93
American Wigeon	59,990	81,258	-26.29
Ruddy	10,365	14,398	-28.01
Shoveler	24,076	32,102	-25.00
Merganser	30,302	35,017	-13.46
Goldeneye	24,320	38,070	-36.12
Bufflehead	22,774	15,985	-57.53
Scoter	2,647	2,785	- 4.96
Wood Duck	141,047	123,915*	+13.02
Others	1,033	1,460	-29.25
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Total Ducks Retrieved	2,788,180	4,906,104	-43.17
Total Ducks not Retrieved	716,160	1,107,988	-35.36
Total Duck Kill	3,504,341	6,014,092	-41.73
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Canada Goose**	140,421**	212,892	-34.04
Blue Goose	59,041	47,429	+24.48
Snow Goose	31,962	31,586	+ 1.19
White-fronted Goose	15,165	5,790	+161.92
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Total Geese Retrieved	246,589	297,697	-17.16
Total Geese not Retrieved	62,183	79,361	-21.65
Total Goose Kill	308,772	377,058	-18.11
Total Coots Retrieved	82,663	295,146	-71.99
Total Coots Not Retrieved	47,943	63,796	-24.85
Total Coot Kill	130,606	358,942	-63.61

* Closed season on Wood Ducks in States of Kentucky, Illinois, Iowa, Michigan, Minnesota, Missouri, Wisconsin, Indiana and Arkansas.

**Included in this total are 580 small white-cheeked geese reported as Hutchins.

Table 8

Mississippi Flyway Data

Number of Hunters, Average Times Hunted, Seasonal Bag, Seasonal Unretrieved Kill and Daily Bag as Determined by the Waterfowl Hunter Mail Survey.

		1959-1960	1958-1959	Percent Change 1958-59 to 1959-60
Number of Potential Hunters				
Over 15*		694,516	924,628	-24.89
Under 16		55,768	69,832	-20.14
		750,284	994,460	-24.55
Number of Active Hunters**				
Over 15		604,232	817,186	-26.06
Under 16		42,752	53,671	-20.35
		646,984	870,857	-25.71
Average Times Hunted**		3.874	3.901	- 0.69
Average Seasonal Bag**				
Over 15	Ducks	4.152	5.786	-28.24
	Geese	.396	.358	+10.61
	Coots	.122	.332	-63.25
Under 16	Ducks	2,375	3,309	-28.23
	Geese	.170	.103	+65.05
	Coots	.204	.439	-53.53
Average Seasonal No. Not Retrieved**				
Over 15	Ducks	1.136	1.318	-13.81
	Geese	.099	.095	+ 4.21
	Coots	.071	.071	N.C.
Under 16	Ducks	.700	.574	+21.95
	Geese	.056	.025	+124.00
	Coots	.117	.111	+ 5.40
Average Daily Bag**				
Over 15	Ducks	1.072	1.483	-27.71
	Geese	.102	.091	+12.09
	Coots	.031	.085	-63.53
Under 16	Ducks	.613	.848	-27.71
	Geese	.044	.026	+69.23
	Coots	.053	.113	-53.10

*Individuals who purchased a Duck Stamp with intent to hunt.

**Individuals who hunted at least once.

Table 9. Duck Kill and Hunting Activity in the Mississippi Flyway

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ¹	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-7	2.22	3.13	4.10	1.46
2	8-14	2.22	2.73	2.52	1.02
3	15-21	2.22	2.66	2.31	.97
4	22-28	2.22	2.25	1.99	.98
5	29-35	2.22	1.94	1.76	1.01
6	36-45	2.22	1.10	1.12	1.13

¹The average number of periods per hunter was 1.87.

Explanatory Comments for Table 9

The hunting season was 40 days long in some States of the Mississippi Flyway and 50 days long in other States. Data for the two lengths of season are given separately in Tables 9A and 9B. Data are combined in Table 9.

For the Flyway as a whole, each day is 2.22% of the total (Table 9, Column 3). Therefore, any daily percentage (in Columns 4 or 5) that differs from 2.22 is correspondingly greater or lesser than the average for that characteristic. The average rates for the States with 40 or 50-day seasons are shown in Column 3 of Tables 9A and 9B.

Daily hunting activity (Table 9, Column 4) decreased during the season. Half of the hunting in the Mississippi Flyway (combined data) was done by the time 40 per cent of the season was over, and 63 per cent was done by the time the season was half over. This was similar to the pattern of hunting activity in the Atlantic Flyway (40 and 50 days) and the Central Flyway (50 and 60 days) but in contrast to the Pacific Flyway (94 days) where half of the season was over before half the hunting was done.

Daily percentages of the total duck bag also declined during the season.

Hunters bagged ducks throughout the season, but hunting activity was not well coordinated with the daily average bag, as can be seen by comparing Column 4 with Column 6. The highest rate of hunting activity occurred when the daily average bag was greatest (first

period), but the lowest rate of hunting activity occurred when the daily average bag was next to greatest (last period). Hunting activity was not precisely coordinated with duck kill in any of the Flyways.

Table 9a Duck Kill and Hunting Activity in the Mississippi Flyway:
40-Day Season¹

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ²	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-7	2.50	2.85	3.59	1.44
2	8-14	2.50	2.62	2.36	1.03
3	15-21	2.50	2.61	2.20	.96
4	22-28	2.50	2.36	2.21	1.08
5	29-35	2.50	2.17	2.14	1.13
6	36-40	2.50	2.35	2.49	1.21

¹Alabama, Arkansas, Illinois, Kentucky, Louisiana, Michigan, Ohio, Tennessee. There was a split season of 45 days in Indiana.

²The average number of periods per hunter was 1.91

Table 9b Duck kill and Hunting Activity in the Mississippi Flyway:
50-Day Season¹

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ²	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-7	2.00	3.42	4.62	1.46
2	8-14	2.00	2.83	2.68	1.03
3	15-21	2.00	2.72	2.42	.96
4	22-28	2.00	2.14	1.76	.88
5	29-35	2.00	1.71	1.38	.87
6	36-50	2.00	.68	.66	1.05

¹Iowa, Minnesota, Mississippi, Missouri, Wisconsin

²The average number of periods per hunter was 1.84

Table 10

Central Flyway DataWaterfowl Kill Information

The following table presents the estimated number of waterfowl bagged and waterfowl knocked down but not retrieved during the 1958-59 and 1959-60 shooting seasons as determined by the Waterfowl Hunter Mail Survey:

Species	1959-1960	1958-1959	Percent Change
			1958-59 to 1959-60
Mallard	694,563	1,153,216	-39.77
G-W Teal	186,008	409,670	-54.60
Pintail	126,224	267,893	-52.88
B-W Teal	116,210*	170,021*	-32.24
Redhead	25,738	81,829	-68.55
Canvasback	33,744	78,734	-57.14
Shoveler	34,074	74,596	-54.32
Gadwall	23,715	37,618	-36.96
American Wigeon	28,550	30,106	- 5.17
Scaup	108,032	39,065	+176.54
Ruddy	4,749	10,683	-55.55
Cinnamon Teal	11,018*	34,177*	-67.76
Bufflehead	5,509	10,091	-45.41
Wood Duck	13,084	33,425	-60.86
Ring-necked	14,419	43,845	-67.11
Merganser	3,630	3,971	- 8.59
Goldeneye	2,912	7,887	-63.08
Black Duck	1,320	901	+46.50
Scoter	502	1,089	-53.90
Others	689	1,121	-38.54
<hr/>			
Total Ducks Retrieved	1,434,692	2,489,941	-42.38
Total Ducks Not Retrieved	206,647	448,918	-53.97
Total Duck Kill	1,641,339	2,938,859	-44.15
<hr/>			
Canada Goose	126,611**	123,800***	+ 2.27
Snow Goose	51,774	58,613	-11.67
Blue Goose	20,111	17,936	+12.13
White-fronted Goose	13,208	7,720	+71.09
Others	1,357	--	--
<hr/>			
Total Geese Retrieved	213,061	208,069	+ 2.40
Total Geese Not Retrieved	30,503	37,743	-19.18
Total Goose Kill	243,564	245,812	- .92
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Total Coots Retrieved	16,240	80,673	-79.87
Total Coots Not Retrieved	11,528	30,383	-62.06
Total Coot Kill	27,768	111,056	-75.00

- * It is probable that both Blue-winged and Cinnamon Teal are included in the estimates for each of these species since coloration of the female in these species is identical. The net error resulting from this misclassification is unknown.
- ** Included in this total are 15,053 small white-cheeked geese reported as Hutchins or Cackling.
- ***Included in this total are 5,763 small white-cheeked geese reported as Hutchins or Cackling. The number of these small geese reported as Canada goose is unknown.

Table 11

Central Flyway Data

Number of Hunters, Average Times Hunted, Seasonal Bag, Seasonal Unretrieved Kill and Daily Bag as Determined by the Waterfowl Hunter Mail Survey.

		1959-1960	1958-1959	Percent Change 1958-59 to 1959-60
Number of Potential Hunters				
Over 15*		363,539	503,658	-27.82
Under 16		38,740	55,549	-30.26
Total		402,279	559,207	-28.06
Number of Active Hunters**				
Over 15		290,897	424,221	-31.43
Under 16		27,218	45,049	-39.58
Total		318,115	469,270	-32.21
Average Times Hunted**		3,278	3,569	- 8.15
Average Seasonal Bag**				
Over 15	Ducks	4,745	5,640	-15.87
	Geese	.715	.479	+49.27
	Coots	.049	.175	-72.00
Under 16	Ducks	1.996	2.190	- 8.86
	Geese	.187	.109	+71.56
	Coots	.075	.143	-50.98
Average Seasonal No. Not Retrieved				
Over 15	Ducks	.656	1.000	-34.40
	Geese	.098	.087	+12.64
	Coots	.036	.067	-46.27
Under 16	Ducks	.581	.552	- 5.25
	Geese	.069	.020	+245.00
	Coots	.040	.043	- 6.98
Average Daily Bag**				
Over 15	Ducks	1.448	1.580	- 8.36
	Geese	.218	.134	+62.69
	Coots	.015	.049	-69.39
Under 16	Ducks	.609	.614	- 0.82
	Geese	.057	.030	+90.00
	Coots	.023	.040	-42.50

*Individuals who purchased a Duck Stamp with intent to hunt.

**Individuals who hunted at least once.

Table 12. Duck Kill and Hunting Activity in the Central Flyway:

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ¹	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-7	1.82	2.54	3.16	1.71
2	8-14	1.82	2.33	2.00	1.18
3	15-21	1.82	2.37	2.14	1.24
4	22-28	1.82	2.21	1.78	1.11
5	29-39.5	1.82	1.59	1.71	1.49
6	39.6-55	1.82	1.00	1.08	1.49

¹The average number of periods reported per hunter was 1.49

Explanatory Comments for Table 12

The hunting season was 50 days long in some States of the Central Flyway and 60 days long in other States. Data for the two lengths of season are given separately in Tables 12A and 12B. Data are combined in Table 12.

For the Flyway as a whole, each day is 1.82% of the total (Table 12, Column 3). Therefore, any daily percentage (in Columns 4 or 5) that differs from 1.82 is correspondingly greater or lesser than the average for that characteristic. The average rates for the States with 50 or 60-day seasons are shown in Column 3 of Tables 12A and 12B.

Daily hunting activity (Table 12, Column 4) decreased during the season. Half of the hunting in the Central Flyway (combined data) was done by the time 38% of the season was over and 64% was done by the time the season was half over. This was different from the Pacific Flyway where half the hunting was done by the time the 94-day season was half over, but was similar to the situation in both the Mississippi and Atlantic Flyways.

Daily percentages of the total duck bag also declined during the season.

Hunters bagged ducks through the season, but hunting activity was not well coordinated with the daily average bag as can be seen by comparing Columns 4 and 6.

The highest rate of hunting activity occurred when the daily average bag was greatest (first period), but the lowest rate of hunting activity occurred when the daily average bag was next to greatest (last period). Hunting activity was not precisely coordinated with duck kill in any of the Flyways.

Table 12A. Duck Kill and Hunting Activity in the Central Flyway:
50 Day Season.¹

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ²	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-7	2.00	2.80	3.72	.97
2	8-14	2.00	2.77	2.47	.65
3	15-21	2.00	2.24	2.11	.69
4	22-28	2.00	2.14	1.75	.60
5	29-35	2.00	1.93	1.66	.63
6	36-50	2.00	1.12	1.20	.78

¹Colorado, Montana, New Mexico, North Dakota, Texas.

²The average number of periods reported per hunter was 1.37.

Table 12B. Duck Kill and Hunting Activity in the Central Flyway:
60 Day Season.¹

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ²	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-7	1.67	2.29	2.63	.84
2	8-14	1.67	1.90	1.56	.60
3	15-21	1.67	2.50	2.18	.64
4	22-28	1.67	2.28	1.81	.58
5	29-44	1.67	1.44	1.70	.86
6	45-60	1.67	.89	.97	.80

¹Kansas, Nebraska, Oklahoma, South Dakota, Wyoming.

²The average number of periods per hunter was 1.62.

Table 13

Pacific Flyway Data

Waterfowl Kill Information

The following table presents the estimated number of waterfowl bagged and waterfowl knocked down but not retrieved during the 1958-59 and 1959-60 shooting seasons as determined by the Waterfowl Hunter Mail Survey.

Species	1959-1960	1958-1959	Percent Change 1958-59 to 1959-60
Mallard	761,155	1,227,009	-37.97
Pintail	398,027	851,253	-53.24
American Wigeon	276,561	443,292	-37.61
G-W Teal	265,995	367,731	-27.66
Shoveler	95,566	156,854	-39.07
Canvasback	28,004	67,988	-58.81
B-W Teal	77,075	85,879	-10.25
Ruddy	23,967	44,051	-45.59
Scaup	45,936	36,130	+27.14
Redhead	14,453	30,676	-52.89
Bufflehead	22,463	20,323	+10.53
Gadwall	34,511	37,902	- 8.95
Goldeneye	22,141	26,750	-17.23
Cinnamon Teal	40,095	29,043	+38.05
Merganser	11,253	12,472	- 9.77
Scoter	8,719	8,477	+ 2.85
Wood Duck	16,944	22,408	-24.38
Ring-necked	4,381	5,836	-24.93
Others	302	--	- -
<hr/>			
Total Ducks Retrieved	2,147,548	3,474,075	-38.18
Total Ducks Not Retrieved	294,764	615,493	-52.11
Total Duck Kill	2,442,312	4,089,568	-40.28
<hr/>			
Canada Goose	72,775	82,959	-12.28
Snow Goose	49,676	63,306	-21.53
Cackling Goose	52,465	59,034	-11.13
White-fronted Goose	33,451	69,667	-51.98
Brant	6,418	8,909	-27.96
Others	86	--	- -
<hr/>			
Total Geese Retrieved	214,871	284,175	-24.39
Total Geese Not Retrieved	37,217	42,400	-12.23
Total Goose Kill	252,088	326,575	-22.81
<hr/>			
Total Coots Retrieved	57,651	149,810	-61.52
Total Coots Not Retrieved	30,506	54,270	-43.79
Total Coot Kill	88,157	204,080	-56.80

Table 14

Pacific Flyway Data

Number of Hunters, Average Times Hunted, Seasonal Bag, Seasonal Unretrieved Kill and Daily Bag as Determined by the Waterfowl Hunter Mail Survey.

		1959-1960	1958-1959	Percent Change 1958-59 to 1959-60
Number of Potential Hunters				
Over 15*		284,409	386,047	-26.33
Under 16		27,184	36,660	-25.85
		<u>311,593</u>	<u>422,707</u>	<u>-26.29</u>
Number of Active Hunters**				
Over 15		236,259	325,619	-27.44
Under 16		21,701	27,577	-21.31
		<u>257,960</u>	<u>353,196</u>	<u>-26.97</u>
Average Times Hunted**		4.396	4.095	- 7.35
Average Seasonal Bag**				
Over 15	Ducks	8.730	10.252	-14.85
	Geese	.878	.848	+ 3.54
	Coots	.193	.510	-62.16
Under 16	Ducks	3.915	4.922	-20.46
	Geese	.341	.287	+18.81
	Coots	.553	.859	-35.62
Average Seasonal No. Not Retrieved**				
Over 15	Ducks	1.161	1.788	-35.07
	Geese	.150	.126	+19.05
	Coots	.114	.139	-17.99
Under 16	Ducks	.945	1.203	-21.45
	Geese	.080	.053	+50.94
	Coots	.166	.330	-49.70
Average Daily Bag**				
Over 15	Ducks	1.986	2.504	-20.69
	Geese	.200	.207	- 3.38
	Coots	.044	.125	-64.80
Under 16	Ducks	.891	1.202	-25.87
	Geese	.078	.070	+11.43
	Coots	.126	.210	-40.00

*Individuals who purchased a Duck Stamp with intent to hunt.

**Individuals who hunted at least once.

Table 15. Duck Kill and Hunting Activity in the Pacific Flyway.

Period	Days	Daily Percent of Season	Daily Percent of Hunting Activity ¹	Daily Percent of Ducks Bagged	Daily Average Number of Ducks Bagged
(1)	(2)	(3)	(4)	(5)	(6)
1	1-14	1.06	.92	1.07	2.20
2	15-30	1.06	.83	.74	1.69
3	31-46	1.06	1.19	1.15	1.84
4	47-62	1.06	1.18	1.10	1.76
5	63-78	1.06	1.13	1.02	1.71
6	79-94	1.06	1.11	1.29	2.20

¹The average number of periods reported per hunter was 1.95.

Explanatory Comments for Table 15

The hunting season was 94 days long in the Pacific Flyway in the 1959-60 season.

In a season of 94 days, each day is 1.06% of the total (column 3). Therefore any daily percentage (in columns 4 or 5) that differs from 1.06 is correspondingly greater or lesser than the average for that characteristic.

Daily hunting activity (column 4) was fairly constant through the season. The season was half over before half the hunting was done. This is in contrast with results for other Flyways, where half the hunting was done during the first 40% of the season. Hunting seasons in the other Flyways averaged 40 to 60 days, instead of 94.

Daily percentages of the total duck kill (column 5) varied somewhat more than hunting activity. Period 2 was especially low, and period 6 was high.

Hunters were able to shoot ducks throughout the season, as is shown by the average number of ducks bagged per day (column 6). Hunting activity rate was not coordinated precisely with duck kill, as can be seen by comparing column 4 with column 6. Hunting activity was relatively low during both first and last periods, when the maximum bag occurred. Hunting activity was not precisely coordinated with duck kill in any of the Flyways.